

SUMMARY OF THE PROPOSED CALIFORNIA TOXICS RULE

The state of California is currently without numeric water quality criteria for many priority toxic pollutants as required by the Clean Water Act (CWA). The CWA requires states to adopt numeric water quality criteria for toxic pollutants for which EPA has issued CWA Section 304(a) criteria guidance and whose presence could reasonably be expected to interfere with designated uses. The proposed California Toxics Rule includes numeric water quality criteria for priority toxic pollutants necessary to fulfill the requirements of CWA Section 303(c)(2)(B). The proposed Rule also contains an economic analysis associated with the implementation of the Rule which is not covered in this summary.

The CALFED parameters of concern included in the proposed rule are: cadmium, copper, mercury, selenium, zinc, chlordane, DDT, PCBs, toxaphene, pH (Alkalinity as CaCO_3). Criteria proposed in the Rule specific to the CALFED Water Quality Programs' parameters of concern are listed on the tables attached hereto.

History of California's Water Quality Criteria

In mid-April, 1991, California submitted two statewide water quality control plans (the Inland Surface Water Plan [ISWP] and the Enclosed Bay and Estuary Plan [EBEP]), to the EPA for review and approval. On April 11, 1991, California adopted the two statewide water quality control plans. In November, 1991, the EPA concluded its review wherein it approved certain aspects of the plans, but disapproved others. In December, 1992, since the EPA had disapproved portions of each of the California statewide plans, California was included in the EPA's promulgation of the National Toxics Rule (NTR) which contained specific criteria for certain water bodies in California. The provisions for California in the NTR together with the approved portions of California's ISWP and EBEP satisfied the requirements of CWA Section 303(c)(2)(B).

Shortly after the adoption of the ISWP and EBEP, several dischargers filed suit alleging that the state had not adopted the two plans in compliance with state law; namely, the Administrative Procedures Act, the California Environmental Quality Act, and Section 13241 of the Porter Cologne Act. A primary issue in the litigation was that the state did not consider economic impacts when adopting water quality objectives as required by Section 13241 of the Porter Cologne Act. As a result of the lawsuit, a California state court overturned the state's water quality control plans in 1994.

Since September, 1994, when the SWRCB rescinded the ISWP and EBEP due to the court decision, the requirements of CWA Section 303(c)(2)(B) have not been fully implemented in California. To meet the requirements of CWA Section 303(c)(2)(B), the proposed Rule establishes criteria for those priority toxicity pollutants which were previously covered by ISWP and EBEP and are not included in the NTR.

Approach for Developing the Proposed Rule

Where EPA promulgated criteria for California in the NTR it has not acted to amend the criteria. Where criteria for California were not included in the NTR, Section 304(a) national criteria guidance documents were used as a basis for the criteria in the proposed Rule. New information since the development of the national criteria guidance documents has also been incorporated. This new information has been used to develop criteria for human health and aquatic life.

For human health criteria, the criteria values different from the national criteria guidance documents come from EPA Integrated Risk Information System (IRIS) October, 1996, new or revised risk reference doses and cancer potency factors.

For aquatic life criteria, the water quality criteria in the proposed Rule for the state of California different from the national criteria guidance documents were based on updated data sets resulting in revised criteria maximum concentrations (CMCs) and criteria continuous concentrations (CCCs).

Derivation of Aquatic Life Criteria

Aquatic life criteria in the proposed Rule are derived using both CWA Section 304(a) and EPA's 1985 Guidelines. Aquatic life criteria derived using CWA Section 304(a) method "might be thought of as an estimate of the highest concentration of a substance in water which does not present a significant risk to the aquatic organisms in the water and their uses." The 1985 Guidelines derive criteria that protect aquatic communities by protecting most of the species and their uses most of the time, but not necessarily all of the species all of the time. The 1985 Guidelines try to provide a reasonable amount of protection with a limited possibility of substantial overprotection or underprotection.

In the proposed Rule, acute versus chronic numeric aquatic life criteria are expressed as short term and long-term numbers rather than one number. To alleviate the restriction of a one-number criterion, a combination of a criteria maximum concentration (CMC/a short-term acute concentration), and a criteria continuous concentration (CCC/ a four-day average concentration chronic limit), are used to provide protection for aquatic life and its uses from acute and chronic toxicity, and from bioconcentration by aquatic organisms. The two-number criteria are intended to identify average pollutant concentrations which will produce water quality generally suited to the maintenance of aquatic life and their uses and, at the same time, restricting the duration of excursions over the average so that total exposure will not cause unacceptable adverse effects. The criteria are developed using a minimum data set of eight specified biological families of organisms. The eight families of organisms are intended to represent a wide spectrum of aquatic life.

Freshwater Criteria

The proposed Rule contains updated CWA Section 304(a) freshwater aquatic life criteria for the following eleven pollutants: arsenic, cadmium, chromium (VI), copper, mercury, dieldrin, endrin, lindane (gamma BHC), nickel, pentachlorophenol, and zinc.

The freshwater aquatic life criteria in the proposed Rule for these substances differs from the CWA Section 304(a) criteria guidance documents for several reasons: (1) The criteria guidance documents were published between 1980 and 1987. The proposed Rule uses new data and information that was published subsequent to the previous issuance of individual criteria. The use of this updated information resulted in less restrictive acute and/or chronic criteria for cadmium and zinc; (2) Some of the data in the criteria guidance documents was deleted in deriving criteria for dieldrin, endrin and copper because the toxicity testing procedure was unacceptable; and (3) In several of the criteria guidance documents, the Species Mean Acute Values (SMAVs) or Species Mean Chronic Values (SMCVs) had a range that was greater than a factor of five for some genera. In light of this wide range, and in order to provide adequate protection to all tested species in the genus, EPA set Genus Mean Acute Values (GMAVs) or Genus Mean Chronic Values (GMCVs) for those genera equal to the lowest SMAV or SMCV. This new approach applies to cadmium, copper and dieldrin.

The proposed Rule contains freshwater criteria for polychlorinated biphenyls expressed as a total of all aroclors rather than for each aroclor. The NTR criteria for polychlorinated biphenyls are expressed for each aroclor.

Selenium Criteria

The EPA is proposing a different freshwater acute aquatic life criterion for selenium in this proposed rule than was promulgated in the NTR. The proposed Rule takes into account data showing that selenium's two most prevalent oxidation states, selenite and selenate, present differing potentials for aquatic toxicity, as well new data indicating that various forms of selenium are additive; that is, these forms are more toxic together than they are separately. This new approach produces a different selenium acute criterion concentration (CMC) depending upon the relative proportions of selenite, selenate and other forms of selenium that are present. An equation is established in the proposed Rule that will allow calculation of a CMC for selenium based on the relative proportions for selenite, selenate and other selenium forms present in a specific water body. This proposal may produce either a less or a more stringent acute criterion for selenium depending upon which form of selenium is predominant in a water body.

In light of the new data indicating acute toxicities of selenate, selenite, and one form of organoselenium are additive, the proposed Rule establishes separate CMCs for selenate and selenite only in situations in which either selenate or selenite is the only form of selenium in the water column. Laboratory data contained in the 1987 and 1995 criteria documents were relied upon to establish the proposed Rule's acute toxicity of:

<u>Selenite</u> -	185.9 $\mu\text{g/L}$
<u>Selenate</u> -	12.83 $\mu\text{g/L}$

For other forms of selenium, EPA believes that sufficient toxicity data do not exist to allow derivation of CMCs. However, some toxicity tests have found that other forms of selenium can be more toxic than selenate or selenite (with toxicity increasing by as much as 180 times depending on the form of selenium and the test organism). In light of these tests, the proposed Rule contains a default assumption that half of the measured or derived concentration of "other" selenium forms is as toxic as selenate and half is as toxic as selenite.

San Joaquin River

The following site-specific state-adopted criteria for the San Joaquin River, mouth of Merced River to Vernalis, have been previously approved or promulgated in the NTR and remain in effect:

12 $\mu\text{g/L}$ aquatic life criterion (maximum with the understanding that the instantaneous maximum concentration may not exceed the objective more than once every three years)

5 $\mu\text{g/L}$ (monthly mean)

5 $\mu\text{g/L}$ (4-day average)(chronic selenium criterion).

Grassland Water District, San Luis National Wildlife Refuge, and Los Banos State Wildlife Refuge

A state-adopted site-specific aquatic life selenium chronic criterion of 2 $\mu\text{g/L}$ (monthly mean) has been previously approved and remains in effect.

Metals Criteria

Bioavailability/WER Procedure

Bioavailability is an ongoing consideration in the implementation of metals criteria. In order to ensure that metals criteria are appropriate for the chemical conditions in the water in which they are applied, a "water-effect ratio" (WER) procedure is contained in the proposed Rule. The WER procedure is used to compare the bioavailability and toxicity of a specific pollutant in

receiving waters and in laboratory waters. The WER is a measure of the toxicity of a material obtained in a site water divided by the toxicity of the material obtained in laboratory dilution water. If there are no site-specific WER ratios available, the proposed Rule establishes a default WER value of 1.0 be assumed.

The criteria for these metals are expressed in terms of the dissolved fraction of the metal in the water column. Criterion values were calculated by using EPA's Clean Water Act 304(a) guidance values (described in the total recoverable fraction) and then applying the conversion factors.

Cadmium, Copper and Zinc

The following state-adopted site-specific acute criteria for copper, cadmium and zinc in the Sacramento River above of Hamilton City has been previously approved and remain in effect:

<u>Copper</u> -	5.6 $\mu\text{g/L}$ (maximum)
<u>Zinc</u> -	16 $\mu\text{g/L}$ (maximum)
<u>Cadmium</u> -	0.22 $\mu\text{g/L}$ (maximum)

All in the dissolved form using hardness of 40 $\mu\text{g/L}$ CaCO_3

However, the EPA administrator is making a finding that it will be necessary to include *chronic criteria* for copper, cadmium and zinc for the Sacramento River and its tributaries above Hamilton City, as part of the proposed statewide criteria in the proposed Rule.

Mercury

The proposed Rule contains mercury criteria updated from CWA Section 304(a) to the following:

0.77 $\mu\text{g/L}$ (4-day average concentration chronic limit)
1.4 $\mu\text{g/L}$ (short term concentration acute limit)

**TABLE 1: CALFED PARAMETERS OF CONCERN ADDRESSED
IN THE PROPOSED CALIFORNIA TOXICS RULE**

CALFED PARAMETER OF CONCERN	INCLUDED IN PROPOSED CALIFORNIA TOXICS RULE
Boron	
Cadmium	Less stringent: 2.2 µg/l (4-day average) 4.3 µg/l (short-term acute)
Copper	Less stringent: 9.0 µg/l (4-day average) 13 µg/l (short-term acute) More stringent below Hamilton City : 9.0 µg/l (4-day average)
Mercury	Less stringent: 0.77 µg/l (4-day average) More stringent: 1.4 µg/l (short-term acute)
Selenium	More stringent for San Joaquin River: 12 µg/l (maximum)
Zinc	Less stringent: 120 µg/l (4-day average) 120 µg/l (short-term acute)
Carbofuran	
Chlordane	No change in criteria
Chlorpyrifos	
Diazinon	
DDT	No change in criteria
PCB's	No change in criteria
Toxaphene	No change in criteria
pH (Alkalinity as CaCO ₃)	No change in criteria
Ammonia	
Bromide	
TOC	
Chloride	
Nutrients (Nitrate)	
Salinity	
SAR:EC relationship	
Salinity (TDS)	
Dissolved oxygen	
Pathogens	
Temperature	
Turbidity	
Unknown Toxicity	

10 out of 27 Parameters of Concern are included in proposed California Toxics Rule

5 out of 10 of 27 Parameters of Concern have a change in the criteria

Blank cells indicate CALFED Parameters of Concern not addressed in the proposed California Toxics Rule.